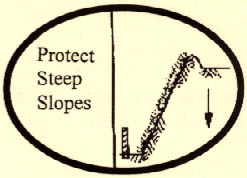
9 Mats and Blankets



DESCRIPTION/GOALS

Mats and blankets are organic or synthetic materials applied to the soil surface as a continuous sheet and used to protect disturbed areas from erosion and to enhance seed growth. The most frequent application of mats and blankets is on steep slopes or in channels, where mulches are ineffective (See Fact Sheet 7).

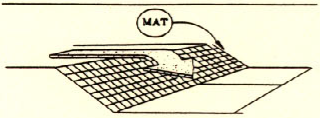
TECHNIQUES

There are several variations in the types of erosion control blankets and mats, although they accomplish the same goal. Three commonly used techniques are erosion control blankets, jute mats and turf reinforcement matting.

Erosion control blankets are a mulch material surrounded by a plastic netting. The material inside the netting can be a variety of organic materials, such as coconut fibers or curled wood, and can also include synthetic fibers. Erosion control blankets are generally very effective, and their performance is strongly influenced by installation. Blankets must be secured to the ground using long staples, and care needs to be taken to ensure that water does not flow beneath the blanket.

Jute mats are sheets of woven jute fiber. Like erosion control blankets, they are installed using metal staples. Jute can be used as a channel protection device or to cover seeds on slopes. Jute degrades over time and should be used as a protection for seeds as they grow, not as a substitute for seeding.

Turf reinforcement matting is usually a geotextile matrix. Matting is expensive, but is the most effective choice for channels. Mats are laid



Source: The Construction BMP Handbook - State of CA
California State Water Resources Control Board

APPROXIMATE COST: $1.50/sy

EFFECTIVENESS

	Low	Mod	High
Erosion/ Sediment Control			✓
Long-Term Pollutant Reduction		✓	
Habitat / Stream Protection		✓	

EASE OF APPLICATION

	Difficult	Average	Easy
Installation		✓	
Maintenance			✓

LIMITATIONS

- Flat slopes (Method is not cost - effective)

on the soil surface and covered with topsoil and seed. They stabilize the soil and hold seeds in place.

Limitations/Challenges

Blankets and mats are appropriate for steep slopes and channels, where mulches can fail, but their use is often restricted on flat slopes. Common examples included Enkamat and Miramat reinforcement mats. Mulches, which are much less expensive, perform well in these conditions.

The greatest challenge to successfully implementing blankets and mats is installing them correctly. Their field performance can be erratic, primarily due to the success in anchoring the blankets or mats to the soil surface.

Innovations/Improvements

The geotextile industry is rapidly changing, and materials are constantly improving. "Spray-on blankets," also called fiber bonded matrices, are a fast-growing new technique. They cost about $1.50/sy and preliminary testing shows that they perform similarly to erosion control blankets. Since they are sprayed on, there is less room for user error than with jute mats or erosion control blankets. This technique performs the best when used to establish vegetation. Like erosion control mats and blankets, its use on flat slopes is limited by the cost, which is high compared with mulches.

Sediment Removal Efficiency of Erosion Control Blankets

Blanket	Sediment Reduction (%)
70% wheat straw/ 30% coconut fiber blanket[2]	98.7[b]
Straw blankets[3]	89.2-98.6[b]
Straw blanket[1]	92.8[a]
Curled wood fiber blanket[1]	28.8[a]
Curled wood fiber blanket[3]	93.6[b]
Curled wood fiber blanket[2]	93.5[b]
Jute mat[1]	60.6[a]
Synthetic fiber blanket[1]	71.2[a]
Nylon monofilament blanket[2]	53.0[b]

[a] TSS load reduction [b] Soil load reduction [c] TSS event concentration reduction
[1] 24% slope gravelly sany loam for 13 storms over two Washington winters. (Horner et al., 1990)
[2] 9% slope silt loam soil. Subected to a 5.8", one hour storm. (Harding, 1990)
[3] 30% slope clay loam Subjected to a 3.1", ½ hour simulated storm (Wall, 1991)

Source: *Watershed Protection Techniques* Vol. 2 #3

Blanket/ Mat Suppliers

Akzo Nobel Geosynthetics Co.
Asheville, NC
(704) 665-8125

American Excelsior Co.
Arlington, TX
(800) 777-7645

Bonterra America, Inc.
Moscow, ID
(800) 882-9489

North American Green
Evansville, IN
(812) 867-6632

Verdyol, Inc.
Pell City, AL
(205) 338-4411

Weyerhauser Co.
Snoqualmie, WA
(800) 443-9179

For more information contact the International Erosion Control Association at (800) 455-4322 or ask your county Soil and Water Conservation District about local suppliers.